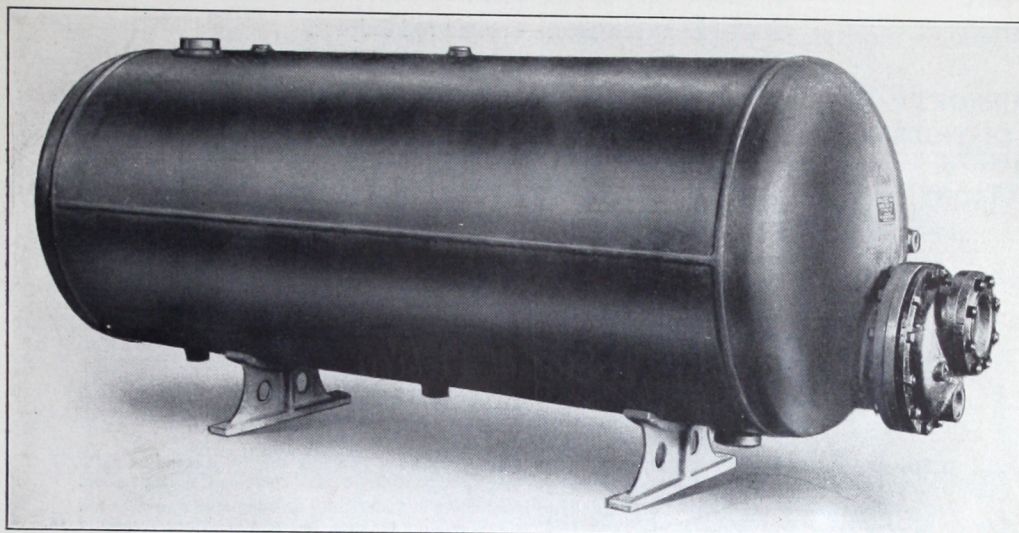


THE WHITLOCK EVERDUR STORAGE HEATER

"good for the life of the building"



The Original Whitlock Storage Heater with shell of the new non-corroding Everdur—stronger and more durable than copper

THE PURPOSE of a storage water heater is to furnish an unfailing supply of clean hot water, day in and day out, over a period of years. To do this the heater must be rugged enough to withstand high and varying water pressures and durable enough to resist the corrosive action of hot water and its active constituents.

In many localities the water supply contains gases, and sometimes other substances, in solution which make it actively corrosive, especially when heated. For this reason many an ordinary steel shell heater has had to be replaced after only a few years of service.

Consideration of the usual size of a storage heater and of its installation in cramped quarters in the basement will make it obvious that the cost of removing an old heater and putting in another may be more than the actual cost of the heater itself! For this reason, if for no other, there has been a demand for an alloy suitable for heater shells which would combine strength and non-corrosive properties.

Another equally important reason, however, is the total elimination of rusty or "red" water troubles—troubles which have caused complaints regarding the color of finished textiles or laundry work, and tenants to choose other quarters.

EVERDUR is the alloy which is so well suited for this need—and the Whitlock EVERDUR Storage Heater is, indeed, "good for the life of the building."

EVERDUR METAL

EVERDUR metal is a copper-rich alloy of copper, silicon, and manganese. It is much harder than commercial copper and has the strength of mild steel. It is available in the commonly used forms such as pipe, tubing, and rolled plate. It is readily cast, and successfully welded, under special conditions, by trained welders. Four tables of comparative physical values are shown on page four of this bulletin and other data, both physical and chemical, will be furnished gladly.

EVERDUR metal is not corroded by water, either cold or hot.

WHITLOCK STORAGE HEATERS

Whitlock Storage Heaters have established for themselves a reputation for performance and dependability. Adding EVERDUR shells to the acknowledged superior heater design results in a storage heater which is as near perfect as modern engineering has produced. On page two you will find details of construction, common uses of EVERDUR heaters, and a typical specification.

A. I. A. File Number 29d2

Details of Construction

- SHELL AND HEADS** — — — — — Solid EVERDUR metal with seams of EVERDUR-weld. Seams riveted with EVERDUR rivets if specified. Heads are flanged and dished, with extra large knuckles radius and approach the true semi-ellipsoid in form.
- HEAD PORT** — — — — — EVERDUR seamless pipe welded to front head of shell with EVERDUR-weld.
- TUBE SHEET** — — — — — Rolled EVERDUR sheet — bolted to headport.
- TUBES** — — — — — Pure drawn seamless copper of heavy gage.
- TUBE SUPPORT** — — — — — Rolled bronze plate and struts.
- STEAM DISTRIBUTING CHAMBER** — — — — — Close grain cast iron (comes in contact with steam only).
- CONNECTIONS** — — — — — Solid EVERDUR reinforced tappings welded to the shell with EVERDUR-weld.

Where to use the Whitlock EVERDUR Storage Heater:

1. Wherever rusty or "red" water is a nuisance, and
2. Wherever you want to save money by installing a heater "once and for all."

Hotels—No hotel guest has yet thanked the management for red water to bathe in! Clean hot water and plenty of it, from a Whitlock EVERDUR Heater, helps to leave the "come again" impression.

Apartment Houses—With an over-supply of apartments in many cities an adequate and clean hot water supply is an important factor in securing and holding tenants. Install a Whitlock EVERDUR and use it as a renting argument.

Gymnasiums—Shower service is unusually severe on a storage heater. The Whitlock EVERDUR stands up nobly under the punishment of heavy draw and long lay periods and the resulting temperature and pressure changes—and furnishes clean, hot water all of the time.

Hospitals—Here, there can be no doubt. Cleanliness is vital. Red water is dangerous. Nowhere is the additional first cost of a Whitlock EVERDUR more warranted or the benefits of continuous operation more appreciated.

Laundries—The most carefully worked out laundry sales campaign is doomed to failure if red water troubles make it next to impossible to turn out the snow white work which the housewife likes. Installation of a Whitlock EVERDUR pays large dividends in holding customers and in eliminating the periodic expense of heater replacement.

Industrial Plants—Countless Industrial processes are dependent on a reliable source of clean hot water. Interruption and delay due to heater failure are costly. Here, again, Whitlock EVERDUR is the one right answer.

Specifications

Furnish and install in horizontal (vertical) position as shown on plans, one Whitlock EVERDUR Storage Heater as manufactured by The Whitlock Coil Pipe Company, Hartford, Conn.

Size and Capacity. Heater shall be () dia. and () long, over bumped heads. It shall have a continuous heating capacity of () gals. per hour heating from () degrees F. to () degrees F. when supplied with sufficient steam at () pounds gauge pressure.

The shell shall be constructed of EVERDUR plate as manufactured by The American Brass Company, with welded seams designed for () pounds working pressure.

Water connections are to be of a size recommended and guaranteed by the manufacturer for the specified duty.

Shells 30" in diameter and greater shall have an 11" x 15" manhole in one head. Shells of smaller diameter shall have a threaded circular handhole in one head.

All water, blow-down, thermometer, thermostat, relief valve connections shall be of the welded type, and consist of forgings or sound castings of copper-silicon-manganese alloy.

The port receiving the heating section shall be of EVERDUR, welded to the bumped head, and provided with a flange to which the heating element and steam distributing head are bolted.

Heating Section. The heating section shall be of the U-bend type, consisting of 1 1/4" O.D. seamless copper tubes not less than No. 17 B.W.G. The ends of the U-bends shall be expanded into a tube sheet which shall be either of suitable composition of solid bronze, or of rolled steel coated, on the water side, with a copper-silicon-manganese alloy not less than 1/8" thick.

The steam distributing head shall be of cast iron, properly designed (with a suitable baffle which shall not restrict the steam inlet area) to distribute the incoming steam among the tubes.

Heating section and distributing head shall be bolted to the flange of the heating section port and shall be removable for cleaning or inspection.

If the heating section is of sufficient length to require extra support, a tube support of rolled or cast brass, or bronze plate carrying the tubes shall be provided. This plate shall be supported in a detachable manner by means of brass or bronze supporting brackets which shall be secured to the shell.

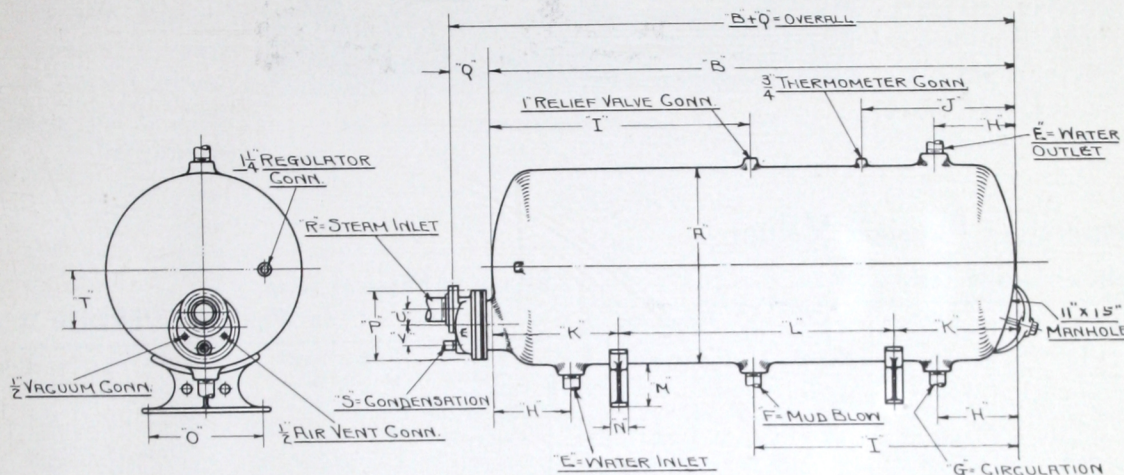
Test. The completed heater shall be subjected to a hydrostatic pressure, in the shell, at least 50% greater than the specified working pressure for a period of not less than 1/2 hour and shall be proved tight under these conditions.

The heating section shall also be subjected to a hydrostatic pressure of 150 pounds, and proved tight at that pressure.

Roughing-in Dimensions for Whitlock EVERDUR Storage Heaters Type "K"

SHELL SIZES 1-31, HEATING SECTION SIZES H0 to H30

Roughing-in dimensions for larger or special sizes or for vertical type "K" heaters, will be furnished promptly on request.



SHELLS														HEATING SECTIONS										
No.	Gallons — one filling	"A" Diam., in.	"B" Length, in., add "Q" for over all	Weight, lb. Approx.	"E" Water inlet and outlet, in.	"F" Mud blow, in.	"G" Circulation, in.	"H" Location of water connection, in.	"I" Location of mud blow, in.	"J" Location of thermometer, in.	"K" Location of cradles, in.	"L" c. c. of cradles	"M" Height, in.	No.	Gallons per hour	Smallest shell into which section will fit, in.	Weight of entire section, lb.	"P" Diam. of head port, in.	"Q" Add to "B" for over all, in.	"R" Max. and std. steam inlet, in.	"S" Max. and std. condensation	"T" Center heater to center of section	"U" Location of steam inlet, in.	"V" Location of cond. outlet, in.
1	65	18	60	400	2	2	...	10	30	22	18	24	4	H0	100	18x48	75	9 1/4	6 1/4	2	1	3	1 1/4	2 1/2
2	80	18	72	450	2	2	...	10	36	22	18	36	4	H1	150	18x60	80	9 1/4	6 1/4	2	1	3	1 1/4	2 1/2
3	118	24	60	600	2	2	...	11	30	23	19	22	6	H2	200	18x72	90	9 1/4	6 1/4	2	1	3 1/2	1 1/4	2 1/2
4	141	24	72	700	2	2	...	11	36	23	19	34	6	H3	250	18x84	175	12 1/2	7 1/2	3 1/2	2	4 1/4	2 1/4	3 1/2
5	164	24	84	800	2	2	...	11	42	23	19	46	6	H4	300	18x84	185	12 1/2	7 1/2	3 1/2	2	4 1/4	2 1/4	3 1/2
6	185	30	60	750	3	2	...	12	30	24	20	20	7	H5	350	18x60	190	12 1/2	7 1/2	3 1/2	2	7 1/2	2 1/4	3 1/2
7	220	30	72	850	3	2	...	12	36	24	20	32	7	H6	400	18x60	200	12 1/2	7 1/2	3 1/2	2	7 1/2	2 1/4	3 1/2
8	255	30	84	950	3	2	...	12	42	24	20	44	7	H7	500	18x72	210	12 1/2	7 1/2	3 1/2	2	7 1/2	2 1/4	3 1/2
9	290	30	96	1050	3	2	...	12	48	24	20	56	7	H8	550	18x72	215	12 1/2	7 1/2	3 1/2	2	7 1/2	2 1/4	3 1/2
10	365	36	84	1300	3	2	...	14	42	26	22	40	8	H9	600	18x84	220	12 1/2	7 1/2	3 1/2	2	10 1/2	2 1/4	3 1/2
11	420	36	96	1450	3	2	...	14	48	26	22	52	8	H10	700	24x60	300	15 1/4	7 1/2	5	2	8 1/4	2 1/4	4 1/2
12	475	36	108	1600	3	2	...	14	54	26	22	64	8	H11	800	18x96	260	12 1/2	7 1/2	3 1/2	2	10 1/2	2 1/4	4 1/2
13	525	36	120	1800	3	2	...	14	60	26	22	76	8	H12	900	18x108	270	12 1/2	7 1/2	3 1/2	2	10 1/2	2 1/4	4 1/2
14	575	42	96	1850	4	2	...	17	48	29	26	44	8	H13	1000	18x120	285	12 1/2	7 1/2	3 1/2	2	13 1/2	2 1/4	4 1/2
15	720	42	120	2150	4	2	...	17	60	29	26	68	8	H14	1250	24x84	370	15 1/4	7 1/2	5	2	11 1/4	2 1/4	4 1/2
16	860	42	144	2500	4	2	...	17	72	29	26	92	8	H15	1500	24x108	425	15 1/4	7 1/2	5	2	11 1/4	2 1/4	4 1/2
17	1000	42	168	2900	4	2	...	17	84	29	26	116	8	H16	1750	24x120	450	15 1/4	7 1/2	5	2	11 1/4	2 1/4	4 1/2
18	950	48	120	2850	4	2	...	18	60	30	27	66	9	H17	2000	30x96	570	18 1/4	8 1/2	6	2 1/2	13 1/2	3 1/4	5 1/2
19	1140	48	144	3250	4	2	...	18	72	30	27	90	9	H18	2400	30x120	620	18 1/4	8 1/2	6	2 1/2	13 1/2	3 1/4	5 1/2
20	1310	48	168	3700	4	2	...	18	84	30	27	114	9	H19	2800	30x132	670	18 1/4	8 1/2	6	2 1/2	13 1/2	3 1/4	5 1/2
21	1480	48	192	4100	4	2	...	18	96	30	27	138	9	H20	3200	36x96	860	21	9 3/8	8	2 1/2	12	4 1/4	6 1/2
22	1190	54	120	3250	4	2	...	20	60	32	30	60	9	H21	3600	36x108	920	21	9 3/8	8	2 1/2	15 1/4	4 1/4	6 1/2
23	1430	54	144	3700	4	2	...	20	72	32	30	84	9	H22	4000	36x120	950	21	9 3/8	8	2 1/2	15 1/4	4 1/4	6 1/2
24	1670	54	168	4200	4	2	...	20	84	32	30	108	9	H23	4400	36x132	1020	21	9 3/8	8	2 1/2	15 1/4	4 1/4	6 1/2
25	1900	54	192	4700	4	2	...	20	96	32	30	132	9	H24	4800	36x96	1200	24	9 3/8	10	3	14 1/4	5 1/4	8 1/2
26	1420	60	120	4300	4	2	...	20	60	32	30	60	10	H25	5400	36x108	1300	24	9 3/8	10	3	17	5 1/4	8 1/2
27	1710	60	144	4900	4	2	...	20	72	32	30	84	10	H26	6000	36x120	1380	24	9 3/8	10	3	17	5 1/4	8 1/2
28	2000	60	168	5600	4	2	...	20	84	32	30	108	10	H27	7000	42x96	1950	30	11 1/2	12	4	14	6 1/2	10 1/2
29	2300	60	192	6200	4	2	...	20	96	32	30	132	10	H28	8000	42x96	2000	30	11 1/2	12	4	14	6 1/2	10 1/2
30	2460	72	144	5700	4	2 1/2	...	23	72	35	34	76	8	H29	9000	42x108	2300	30	11 1/2	12	4	19 1/2	6 1/2	10 1/2
31	2880	72	168	6400	4	2 1/2	...	23	84	35	34	100	8	H30	10000	42x108	2460	30	11 1/2	12	4	19 1/2	6 1/2	10 1/2

EVERDUR Pressure Vessels and Tanks

The characteristics of EVERDUR which make it ideally suited for Storage Heater shells make it equally well suited for a wide variety of other pressure vessel and storage tank work.

Although the alloy is relatively new the Whitlock Engineering Division already has in its files complete data, based on

actual tests, for the design of EVERDUR pressure vessels and tanks.

If you have a corrosion problem in condensers, stills, retorts, mixers, autoclaves, or other equipment write us the complete details. We will advise if EVERDUR is suited for the service and, if so, submit a quotation.



Two 10,000 Gallon Whitlock EVERDUR Accumulators.

Comparative Physical Values

Results of Tensile Tests

	Tensile Strength Lbs. per sq. in.	Yield Point Lbs. per sq. in.	Elongation Percent in 8 ins.
EVERDUR (hot rolled plates)	55,000 to 65,000	27,500 to 32,500	30-40%
Steel boiler plate	55,000 to 65,000	27,500 to 32,500	25% Minimum
Copper (cold rolled plate)	30,000 to 31,000	10,000 to 12,000	30-35%

Thermal Conductivity (per 1° F. Temperature Difference)

	B.t.u. Sq. Ft. Hr. 1 ft. Thickness
Copper	220
EVERDUR	19
Brass (65 Copper—35 Zinc)	70
Iron (Wrought)	35
Nickel	34
Steel (1% C)	26
Lead	20

Results of Physical Tests

on Whitlock EVERDUR Welds

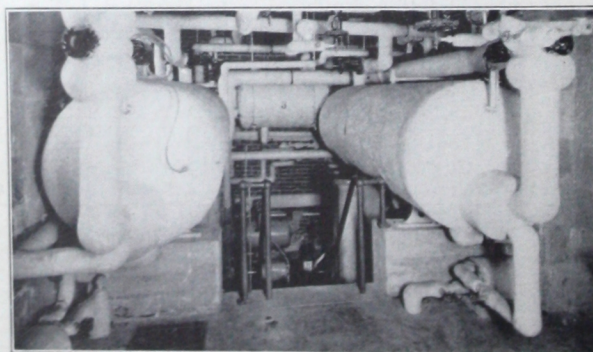
Welding Method	Max. Tensile Strength	Elongation in 2"	Free Bend Test
Electric Arc	54260	20%	50%
Electric Arc	54955	325%	62.5%
Oxyacetylene	54410	59%	69%
Oxyacetylene	52650	73%	56%

These are the results of actual tests made on welds in ½" thick EVERDUR Plate—the weld reinforcement having been entirely planed off before the tests were made.

Coefficient of Linear Expansion (Per 1° C. at 25-100° C.)

Copper	0.0000168
EVERDUR	0.0000170
Nickel	0.0000127
Steel (1% C)	0.0000121
Iron (Wrought)	0.0000116

Typical Installation
of
Whitlock EVERDUR
Heaters



McGiffert Hall,
Union Theological
Seminary
New York, N. Y.

Allen & Collens, Architects.
Edward Corning Co., Builders.
Tenney & Ohmes, Inc., Engineers

THE WHITLOCK COIL PIPE CO., HARTFORD, CONN.

DISTRICT SALES OFFICES

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DETROIT

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CINCINNATI

AUTHORIZED REPRESENTATIVES IN PRINCIPAL CITIES
Manufacturers of and Sales Agents for Whitlock Heaters in Canada
DARLING BROS. LTD., 120 PRINCE STREET, MONTREAL